

**APPEARANCE INSPECTION APPARATUS AND METHOD OF IMAGE
CAPTURING [USING THE SAME]**

WHAT IS CLAIMED IS:

1. An appearance inspection apparatus for inspecting the appearance of a body comprising:

- a scanning head for scanning the body to be inspected; and
- a main unit for controlling the inspection apparatus and said scanning head;

wherein said scanning head further comprises:

- a lighting unit having multiple light sources for projecting light onto a surface of said body to be inspected; and
- a one-dimensional sensor comprising at least a plurality of arrays of multiple arrays of multiple image capturing elements for detecting light reflected from said surface of said body to produce image data; and

wherein said main unit further comprises:

- a head control unit for providing a control signal to said lighting unit for switching said multiple light sources into different lighting states and for controlling the relative motion of said scanning head relative to said body;
- a memory control unit for storing in memory image data produced by said one-dimensional sensor; and
- an analysis unit for correcting shading in said image data in accordance with the different lighting states switched by said head control unit to obtain an appearance inspection image of said body to be inspected.

2. The appearance inspection apparatus of Claim 1 wherein said one-dimensional sensor comprises an array of multiple capturing elements corresponding to three (RGB) colors.

3. The appearance inspection apparatus of claim 2 wherein said main unit further comprises a correction value memory unit for storing digital correction values as a table for each array of said RGB image capturing elements.

4. The appearance inspection apparatus of claim 3 wherein said correction values are utilized to correct shading corresponding to each lighting state of said lighting unit and

wherein said analysis unit corrects shading of said image data with reference to said table kept in said correction value memory unit.

5. The appearance inspection apparatus of Claim 1 wherein said multiple light sources of said lighting unit include:

- a side light source, which projects light onto the surface of said body to be inspected at an angle; and
- a slit light source, which projects a slit light at an angle; and

wherein said head control unit alternately switches said side light source and said slit light source for lighting said surface.

6. The appearance inspection apparatus of Claim 2 wherein said multiple light sources of said lighting unit include:

- a side light source, which projects light onto the surface of said body to be inspected at an angle; and
- a slit light source, which projects a slit light at an angle; and

wherein said head control unit alternately switches said side light source and said slit light source for lighting said surface.

7. A method of obtaining an image of the surface of an object by switching multiple light sources onto said surface in sequence to form different lighting states; forming image data from light reflected from said surface for each of said lighting states and correcting the shading of said image data based on correction values that correspond to each lighting state.